WORKSHOP

Planetary Protection Knowledge Gaps for

Human Extraterrestrial Missions

Goals & Scope

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You are here.

And why you are here…

- To identify our knowledge gaps with respect to human missions to Mars and planetary protection by:
  1. Gathering and discussing information needed to help move closer to definitive (implementation) requirements for future human missions
  2. Assessing the types and levels of research underway and/or needed to fill knowledge gaps in areas consistent with fulfilling COSPAR Principles and Guidelines for Human Missions to Mars
  3. Building a network of expertise to help address planetary protection challenges for human exploration
- So what is a **knowledge gap**?
  - A question that cannot be definitively answered, or
  - A concern that cannot be addressed…until further research, study, and/or testing is completed.

Ultimately, you are here to help us get to here

Guiding Assumptions

- We will use the same assumptions as defined in current COSPAR principles for human missions to Mars:
  - Safeguarding the Earth from potential back contamination is the highest planetary protection priority in Mars exploration.
  - The greater capability of human explorers can contribute to the astrobiological exploration of Mars only if human-associated contamination is controlled and understood.
  - For a landed mission conducting surface operations, it will not be possible for all human associated processes and mission operations to be conducted within entirely closed systems.
  - Crewmembers exploring Mars, or their support systems, will inevitably be exposed to Martian materials.

Workshop Scope

Although these subjects may be relevant to planetary protection and human missions, to be successful in our task we should avoid/minimize:

- Prioritizing needed studies, or attempting to forge a consensus on research or testing to close knowledge gaps
  - We want to *collect* good ideas, not rank them
- Any focus on the perceived challenges in the regulation of private-sector versus public-sector exploration missions
  - We are building knowledge to support NASA requirements, not assessing implementation options or the future of space law
- Choosing specific robotic precursor missions
  - Focus on the needed data, rather than a mission to retrieve it
- Including concerns related to long-term Mars settlement and/or terraforming, except as they apply to resource preservation
  - Let's get to Mars first…

Guiding Workshop Questions

- What planetary protection research activities or technical developments do you feel are critical for inclusion in your study area?
- What work/research is already underway?
- Is special information or technology needed to plan for nominal vs. non-nominal situations?
- Are existing options for mitigating contamination adaptable for planetary protection needs on the Martian surface?
- Are there any significant stumbling blocks ahead that are evident? (including coordination across planetary protection, science exploration, engineering, operation and medical communities)
- In your opinion, what still needs to be accomplished?